MANUAL TRAINING REPRINTS
SERIES A NUMBER 3

SELECTED SHOP PROBLEMS

BY

GEORGE A. SEATON

THE MANUAL ARTS PRESS
PEORIA, ILLINOIS

MANUAL TRAINING REPRINTS

Edited by CHARLES A BENNETT,
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Director of Manual Training, Shaw High School, Cleveland, Ohio

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The persistent demand for certain numbers of the MANUAL TRAINING MAGAZINE has made it evident to the publishers that some of the articles in these numbers ought to be reprinted and sold at such a price as will enable teachers to purchase them in quantities for use in their classes. Moreover, it is believed that from time to time in the future, the Magazine will publish articles which, owing to their special value, ought to be reprinted soon after they appear in the Magazine.

To supply this evident need the Manual Training Reprints have been planned and will be issued at regular intervals as the demand may warrant. These will be arranged in two series as follows:

Series A.—Illustrated articles of special practical value for class use.

Series B.—Discussions having special, permanent value, or such as supply needed data to directors of manual training and to students preparing to become teachers.

The following scale of prices, which will be uniform for all the Reprints, has been adopted:

Single copy, postpaid	20 cents.
12 copies in one package	$2.00
25 copies in one package	3.50
50 copies in one package	6.50
100 copies in one package	12.00

The price on number of copies between those given in the above list will be at the rate of the next smaller numbor of copies in the list. For example, 6 copies will cost $1.20; 35 copies will cost $4.90. But as all the reprints are sold at the same price, one may select from all the titles that are published in making up an order of a given number.

REPRINTS NOW READY FOR DISTRIBUTION.

SERIES A.

No. 1. The Construction and Flying of Kites. By C. M. Miller, Assistant Supervisor of Manual Training, Los Angeles, Calif.

No. 2. Coping Saw Work. By Ben W. Johnson, Supervisor of Manual Training, Seattle, Washington.

No. 3. Selected Shop Problems. By George A. Seaton. Director of Manual Training, Shaw High School, Cleveland, Ohio.

INTRODUCTION.

THIS collection of problems in woodworking has been made to meet the needs of busy teachers of manual training. They have all been selected from the Shop Problems Department of the Manual Training Magazine; the text has been revised, and several new pen sketches added. In this form they are quite sure to be welcomed by progressive teachers who are looking for good problems for their classes. Each problem has been put to the test and has proven satisfactory to the teacher who designed it and the pupil who made it.

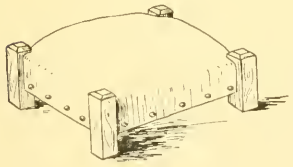
Most of the problems have all the working dimensions given, but a few of them—for example, the simple stool, the tabouret, and the tie rack—need either to have some dimensions supplied by the pupil or they invite thoughtful modification by him. In this way the collection aims to meet a great variety of needs. —THE EDITOR.

SELECTED SHOP PROBLEMS

PADDED STOOL. (Plate 1.)

A PROJECT which never fails to interest the boys and one of which they are sure to be proud when it is completed is the little footstool. As shown with dowel joints it is very easy to construct and very serviceable. If preferred, it can be made with the mortise-and-tenon joint in place of the dowel joint. Another change that might be made is the using of cleats to support the top board instead of rabbeting the rails. The top of the posts can be given a number of different shapes according to the ability of the worker.

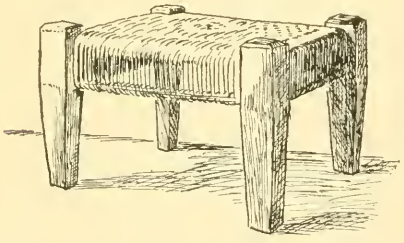
The upholstering takes considerable care to be a success. Genuine leather may be used as a cover or one of the imitation leathers, of which that known as Chase leather is excellent. If this is used as shown in the drawing, going clear over the rails, a piece about 16 by 20 inches will be needed. Instead of doing this a piece about 11 by 15 inches may be used and brought down but a half inch over the rails. In this case it will be necessary to finish the edge with a piece of gimp. For padding either tow, moss or curled hair may be used and the amount will depend upon the material. From a half pound of tow to three-fourths of a pound of curled hair will be ample. The first step will be to lay a stick about an inch thick lengthwise of the stool on the rails. Over this is stretched a piece of muslin 11 by 15 inches which is temporarily tacked in place along the upper edge of the long rails. The stick can now be removed and the padding forced in from both ends until the top is neatly rounded into shape. A tack is first placed in the center of each of the shorter sides which may now be tacked in place by working from the center toward the corners. Any large lumps in the top can be removed by loosening the tacks on the long sides and stretching the muslin tighter over the lumps. The corners are

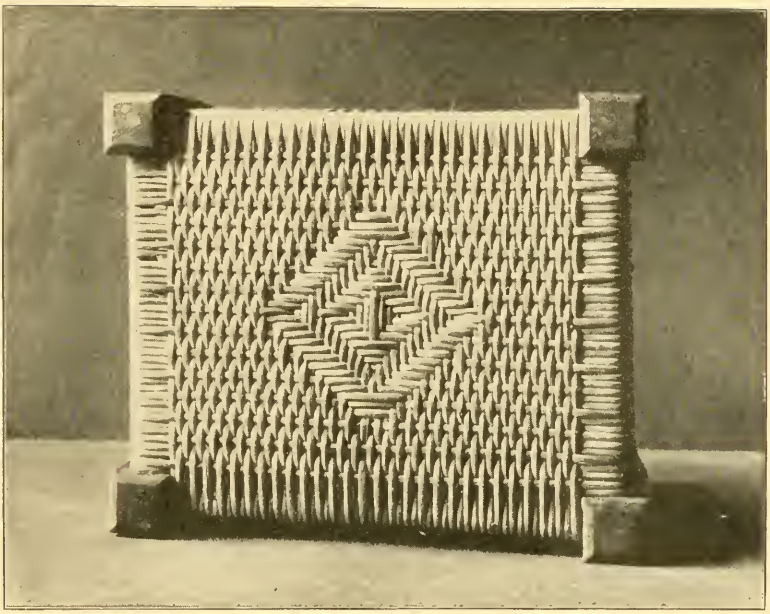


the last to be tacked in place and can be fitted by making a 45-degree cut just far enough in from the outside corner to make a tight fit around the post. Care must be taken to get plenty of padding in the corners. All tacks may now be driven home and the leather put in place much like the muslin, working from the center of the sides toward the corners. The leather is held in place by ordinary tacks driven in the under edge of the rails, or along the upper edge of the rails where the leather does not cover them. Any extra leather should be trimmed off with sharp knife and the large gimp tacks put in for ornament. Where it is desired to have the top especially smooth and free from bumps some cotton batten should be placed under the leather.

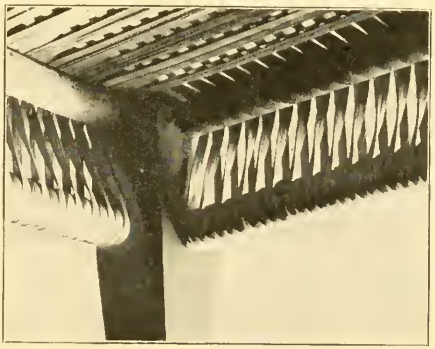
SIMPLE STOOL. (PLATE 2.)

A stool which will prove very pleasing and is so simple that it can readily be made in the eighth grade, or possibly even in a lower grade, is shown in Plate 2. By the use of dowel rods for the cross strip it is possible to do away with the customary mortise and replace it with a simple bored hole. The top is woven from what is known as "binding" which comes in long twists like rattan and is pulled out in the same way from the loop end. One twist is sufficient to cover three stools and costs thirty-five cents. The winding should be completed lengthwise first and should not be drawn absolutely taut as the cross weaving tightens the work considerably. The design can be worked out in the cross weaving, "under and over." No needle is necessary and the binding may be used without any preliminary soaking. Splicing is done by the use of small brass rings. For stronger workers what is known as very fine cane makes a satisfactory seat, and rush can also be used with success.





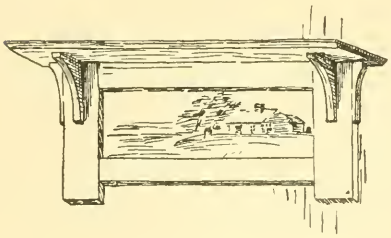
CROSS WEAVING DESIGN FOR STOOL.



SHOWING THE METHOD OF WEAVING
THE SIDES.

FRAME AND PLATE RAIL. (PLATE 3.)

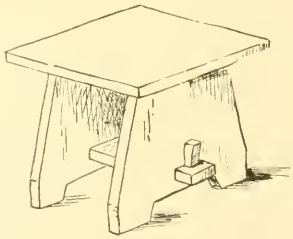
Among the exhibits of interest at the last manual training convention was shown the combined frame and plate rail from the Cleveland schools.



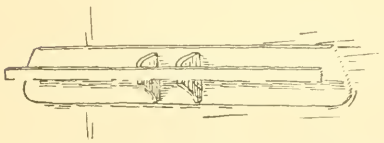
The construction is comparatively simple for a design so pleasing. As shown in the working drawing, no particular type of joint is indicated. This can best be adapted to the abilities of the students undertaking the work. The top shelf is generally made with three narrow grooves for supporting the plates, though the model looks very well where serving simply for a picture frame.

TABOURET. (PLATE 4.)

Walter M. Mohr's article on the "Decorated Shop Model" (1905 Year Book of Council of Supervisors of the Manual Arts) suggested the lines of the tabouret shown, though the dimensions given are those used in East Cleveland. This makes an excellent application of the mortise-and-tenon joint and can be modified by using four legs instead of two.



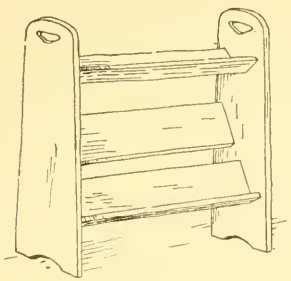
TIE RACK. (PLATE 5.)



It is always difficult to find a problem which is simple enough for the student taking his first steps in woodworking yet which has sufficient beauty to make it worth while. W. E. Roberts of Cleveland provides an attractive model and one which is capable of infinite change by pleasing modifications of the outlines of the ends of the back. It will be surprising what variety may be obtained in this one model from a class.

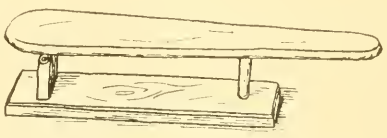
BOOK AND MAGAZINE RACK. (PLATE 6.)

The pleasant room furnished with the work of the manual training students of Cleveland will be remembered by all who visited the Board of Education headquarters during the meeting of the National Education Association. Among the other attractive models was the little rack laden with magazines of interest and displaying a row of books with titles familiar to all teachers of manual training. The placing of the magazine shelf and also the trough for the books made possible the reading of the titles without stopping to examine the books, while the handholes at the top not only allowed the rack to be carried from place to place but also served as just the right touch of ornamentation to relieve the plainness of the sides.

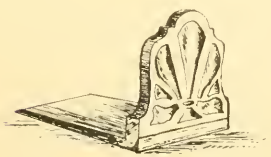


SLEEVE BOARD. (PLATE 7.)

The sleeve board will find its greatest use if it be provided with some sort of base. These two may be permanently fastened together or the board may be hinged to the base. According to Allison P. Ball of Worcester, Massachusetts, who has sent in the sketch, the hinged board seems to meet the needs of the mothers, than whom we have no better critics.



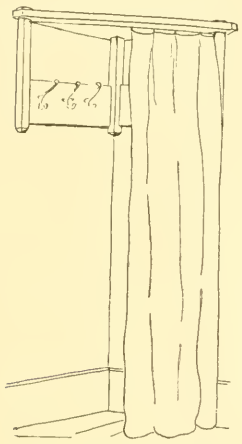
FOLDING BOOK RACK. (PLATE 8.)



A design that appeals because of its ingenuity is the folding book-rack sent in by Frederick B. Riggs of Santee, Nebraska. The hinge which is cut from 26 gauge sheet brass makes it possible to fold the rack into compact form for traveling. The hinge is put on with ¾-inch No. 6 round head brass screws.

STEP LADDER. (PLATE 9.)

There is little that need be said in regard to the construction of the simple step ladder, which is from the design of Philip S. Hasty of the Isadore Newman Manual Training School of New Orleans. The entire end of each step is let into the sides of the ladder as shown. The best cross braces for the back are made from ½ inch or ¾ inch dowel rods, which must be wedged and glued into place. A small pin should be put thru the lower dowel rod just inside the side braces to prevent these from sliding while still allowing them to turn. The notch at the front end of the side braces drops over short pins which are wedged and glued into the sides of the ladder. Nails and glue are used for fastening thruout.

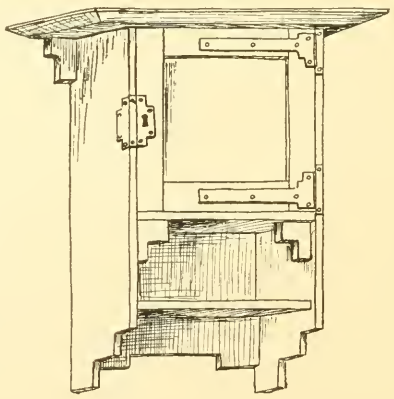


CORNER CLOTHES HANGER. (PLATE 10.)

Those of us who must dwell in the city with its flats and small modern houses will be quick to appreciate the worth of the corner clothes hanger which has been planned by Hans Schmidt of St. Paul. Its convenience and ease of construction should make it a popular project.

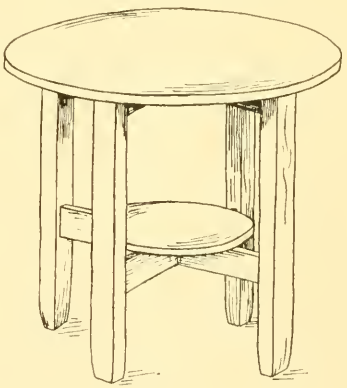
SMALL WALL CABINET. (PLATE 11.)

As an example of cabinet construction the small wall cabinet made in Mr. Weick's classes at Columbia University furnishes an interesting illustration. Considerable opportunity for choice on the part of the student is offered as the dimensions given are merely suggestive. Ordinarily the necessary stock is issued to the students and they are allowed to cut it down to suit their own ideas, the only point insisted upon being the meth-



od of construction. The shaping of the bottom of the sides and the corner blocks can be made a problem in design, while most interesting of all is the designing and making suitable hinges and door pull or escutcheon from sheet brass. If care is exercised in the design, it will be found possible to make the hinges with the simplest of tools. A point worthy of notice in this model is the use of re-inforcing corner blocks at every opportunity. Small triangular blocks, not shown in the drawing, may be used inside of the cupboard, and if sawed off the right length will serve as a stop for the door. The tongue on the door rails is made just long enough to fit into the panel groove on the stiles. To strengthen this joint two quarter-inch dowels are used at every corner.

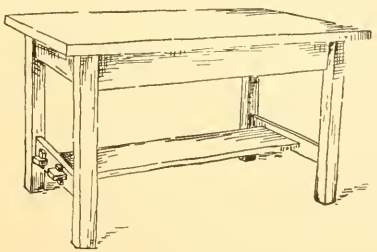
SMALL TABLE. (PLATE 12.)



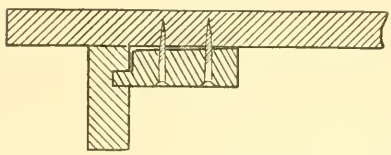
A project always full of interest to the high school boy is the construction of a small table. The one shown is pleasing because of its very simplicity. Its simple lines are capable of modification to suit the taste of the maker. The under side of the cross pieces might be given a slight curve and the tenons could be allowed to project thru the legs about an eighth of an inch. The design is by William E. Roberts of Cleveland.

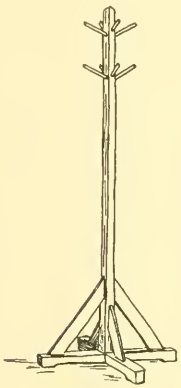
LIBRARY TABLE. (PLATE 13.)

Among the larger pieces of furniture that can be undertaken by high school boys, there is nothing which is so elemental in its construction and yet so satisfactory when completed as the type of library table which is here illustrated. As shown in the drawing there is no drawer, but this might easily be added if thought desirable. No method of fastening the top in place in indicated and this in itself should form



a problem that would set the boys investigating. On a table of this size possibly the best method would be the use of the regular angle irons which are sold for the purpose. If the materials already at hand are to be used, small L-shaped pieces of wood can be made having one end of the L fitted into a small mortise in the side rails and the other end screwed to the under side of the top. In this way the tighter the screw is urged, the closer will be the fit between the top and side rails. The design is by William E. Roberts of Cleveland.



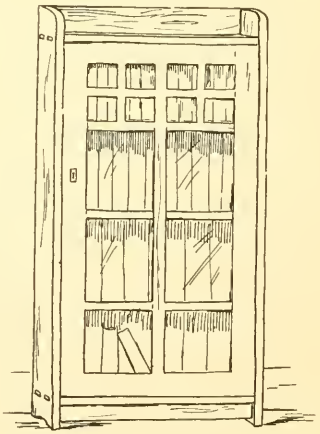


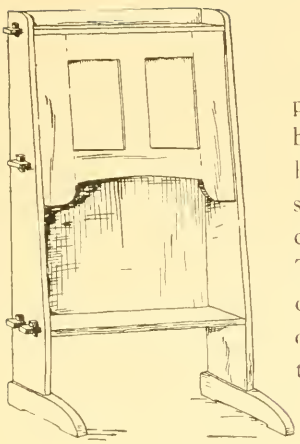
HALL TREE. (PLATE 14.)

The drawing for the hall tree or costumer is from Hans W. Schmidt of St. Paul. As suggested in the note on the drawing, the hangers may be of either metal or wood. Perhaps the wooden pegs may appeal as being more in harmony with the design, though metal hangers are apt to prove more practical.

BOOK CASE. (PLATE 15.)

In harmony with some of the other furniture designs contributed by William E. Roberts of Cleveland, is the bookcase shown herewith. This also is by Mr. Roberts. The main dimensions alone have been indicated and the others may be varied to suit conditions. The door which is shown may also be omitted should the maker be lacking in the necessary time or skill.





DESK. (Plate 16.)

Where a small desk is desired nothing will prove more satisfactory than the one which has been designed by William E. Roberts of Cleveland, after a craftsman pattern. The very simplest of outlines have been shown but these can be varied in a number of different ways. The usual pigeonholes are omitted because the desk is so shallow. In their place are a couple of pockets just hinted at by the dotted lines of the end view.

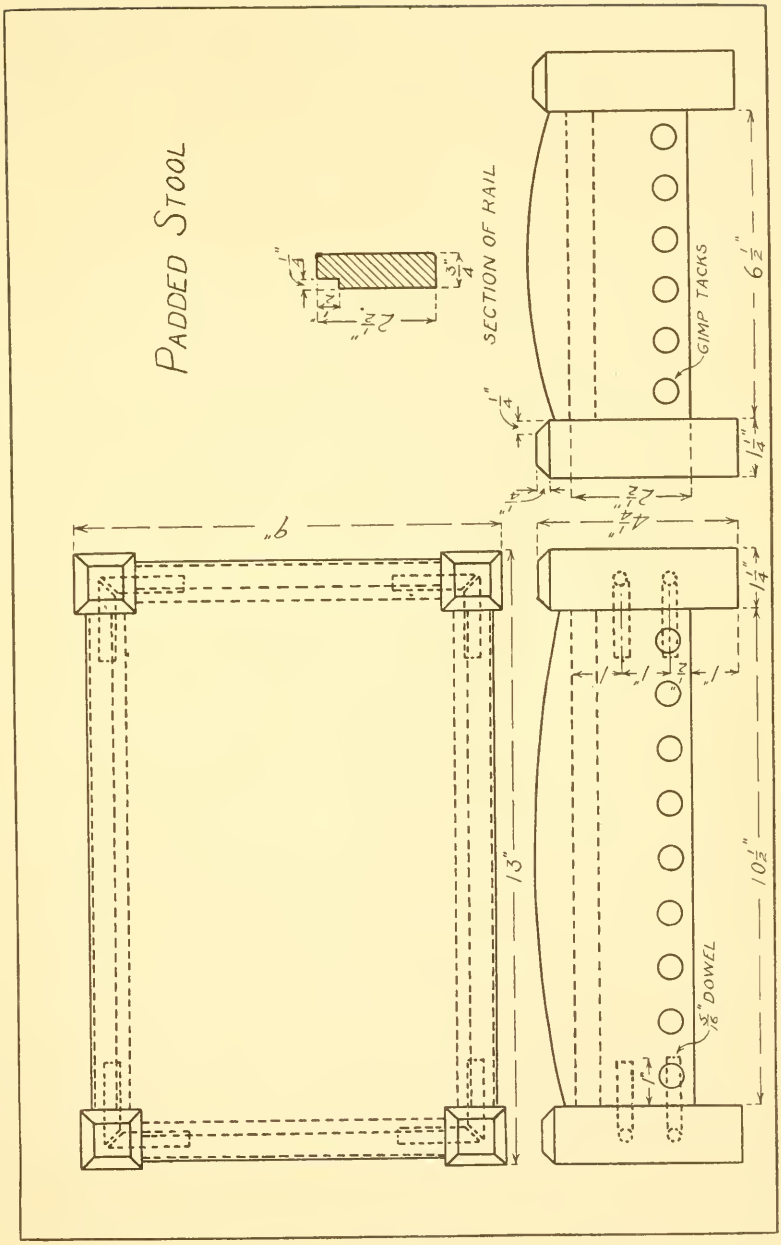


PLATE 1.

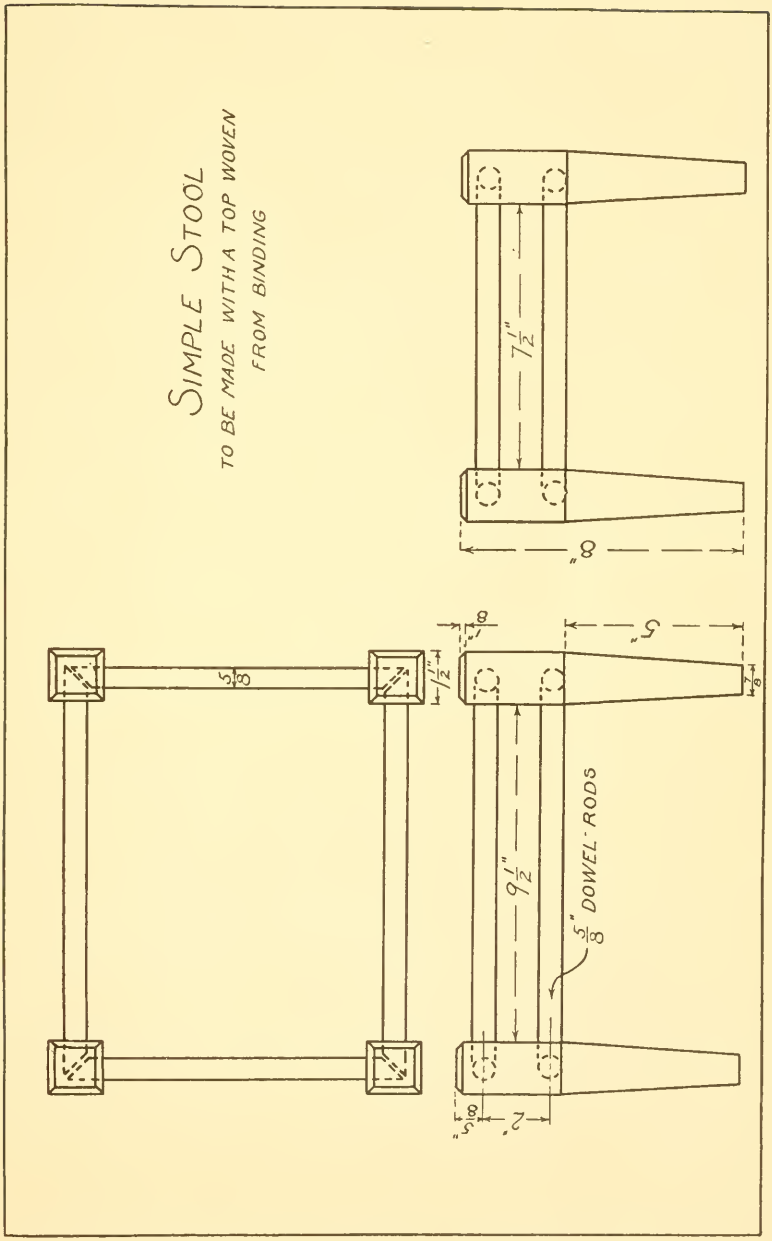

SIMPLE STOOL
TO BE MADE WITH A TOP WOVEN
FROM BINDING
7½"
8"
5"
8
⅝
1½"
9½"
⅝" DOWEL RODS
2"

PLATE 2.

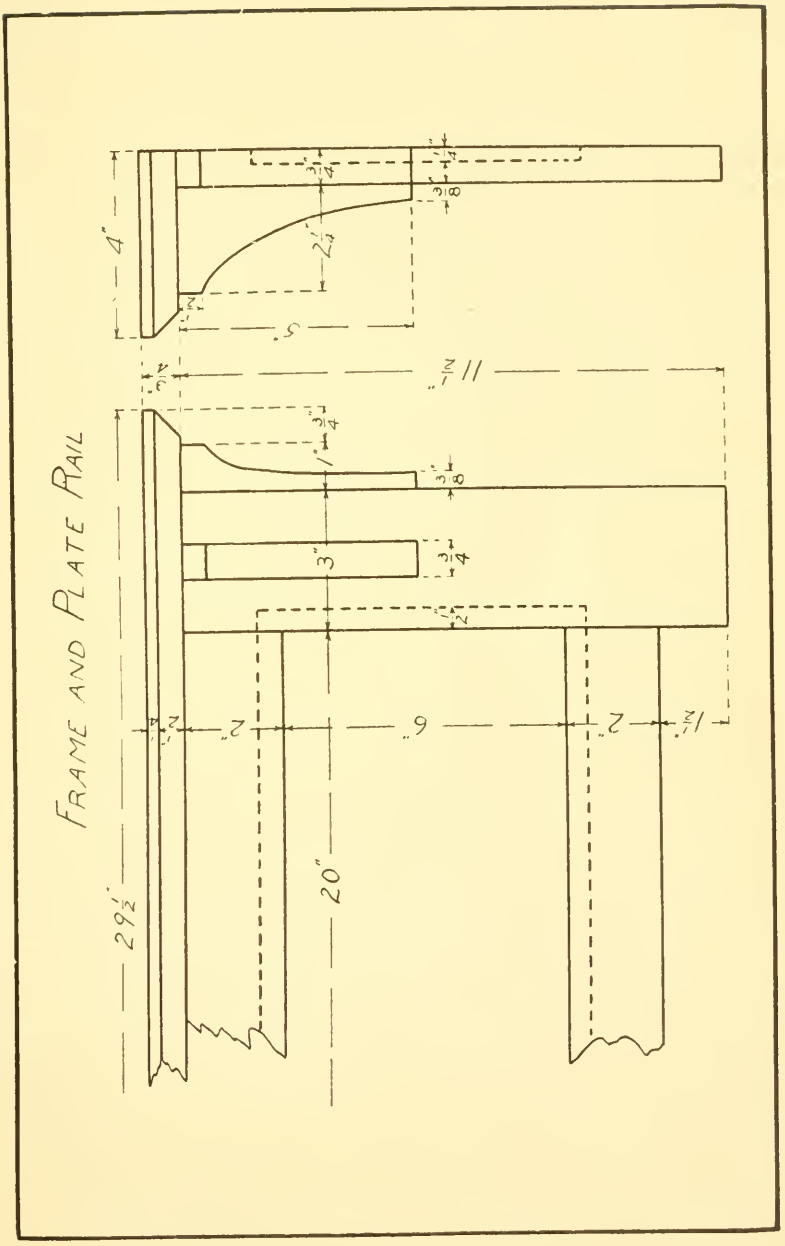


PLATE 3.

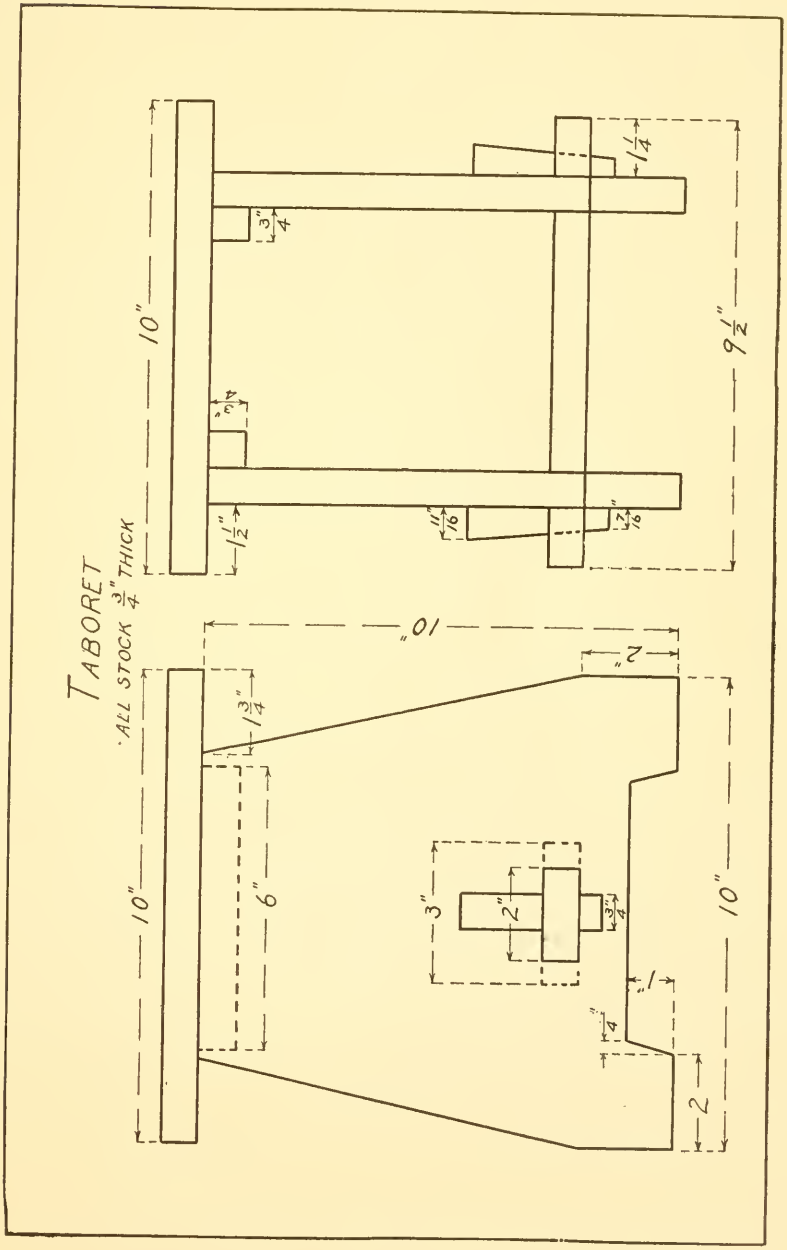


PLATE 4.

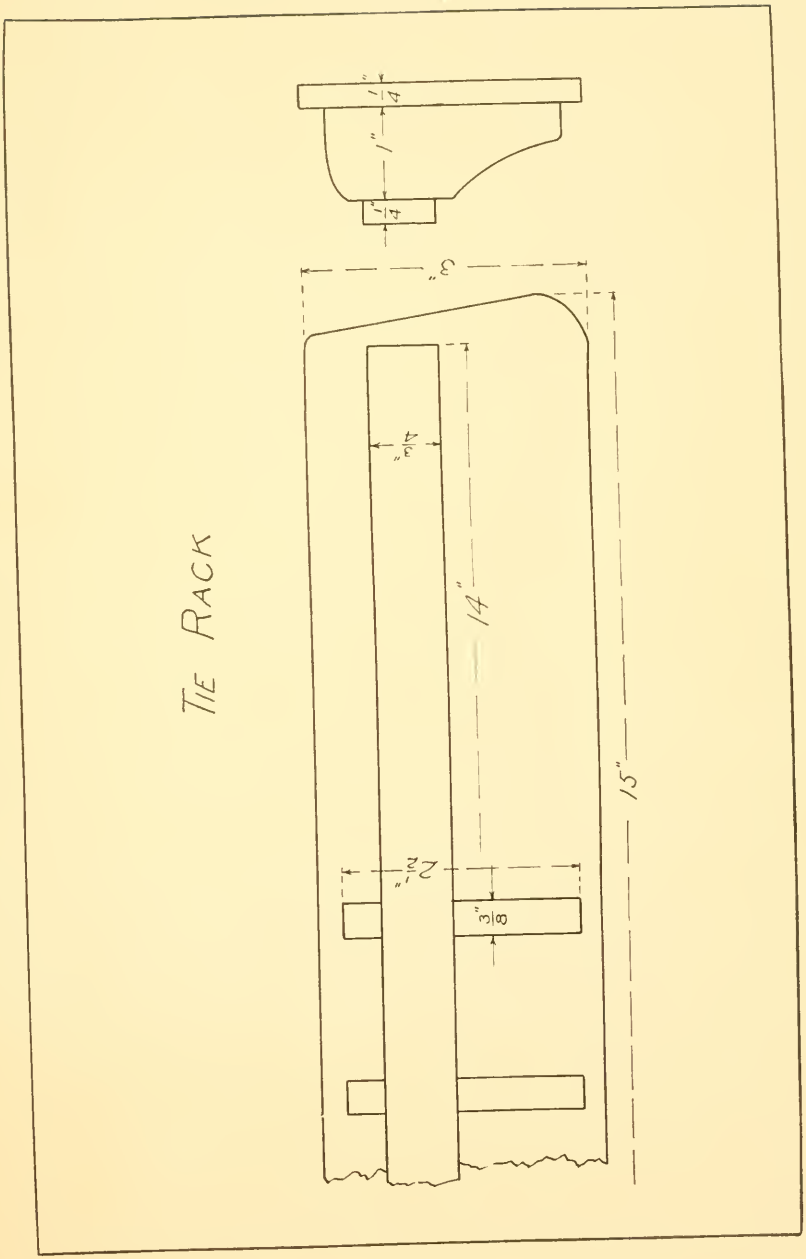


PLATE 5.

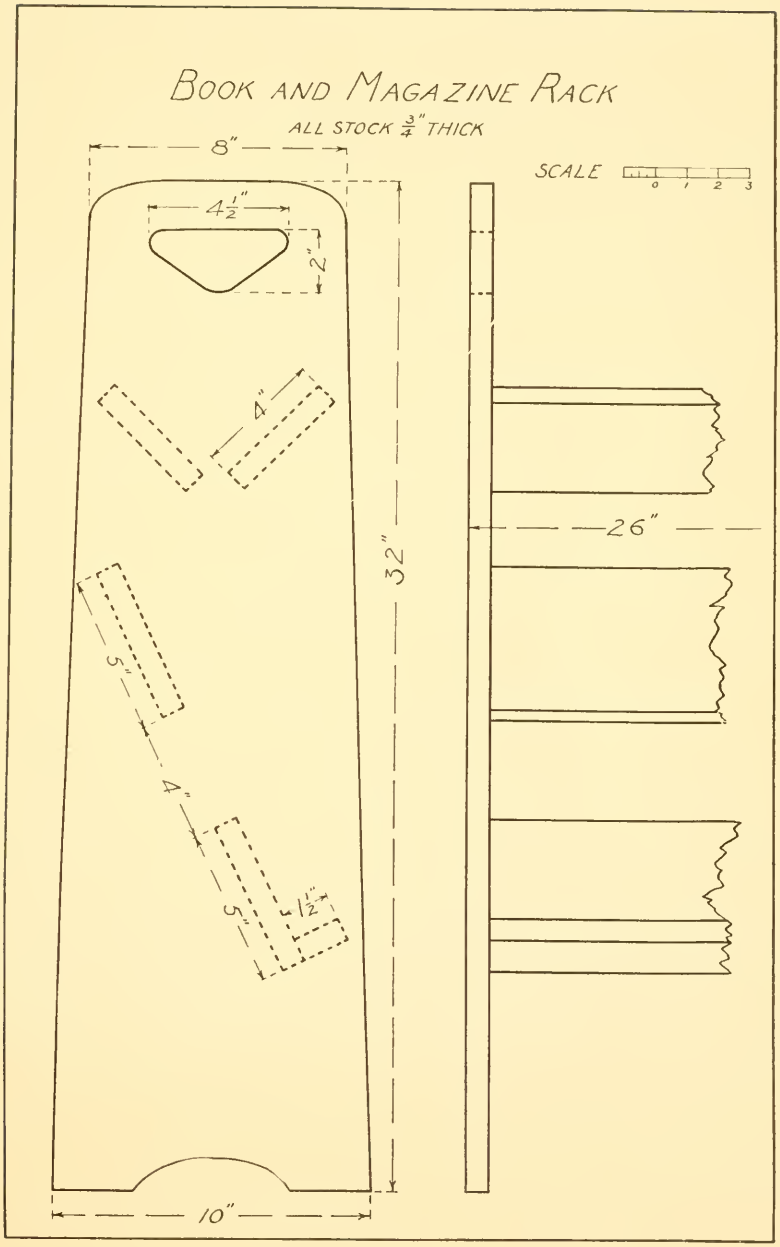
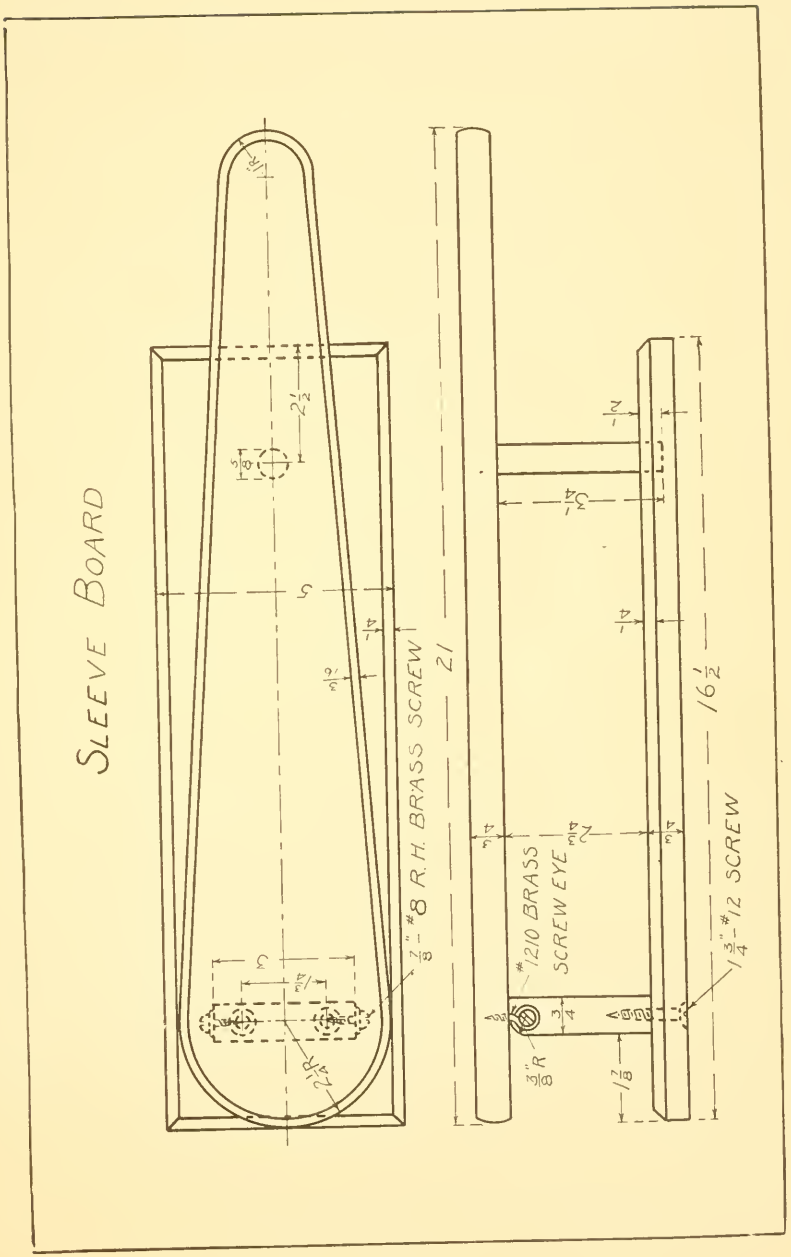

BOOK AND MAGAZINE RACK
ALL STOCK ¾" THICK
SCALE
0 1 2 3
8"
4½"
2"
4"
32"
5"
4"
5"
1½"
26"
10"

PLATE 6.



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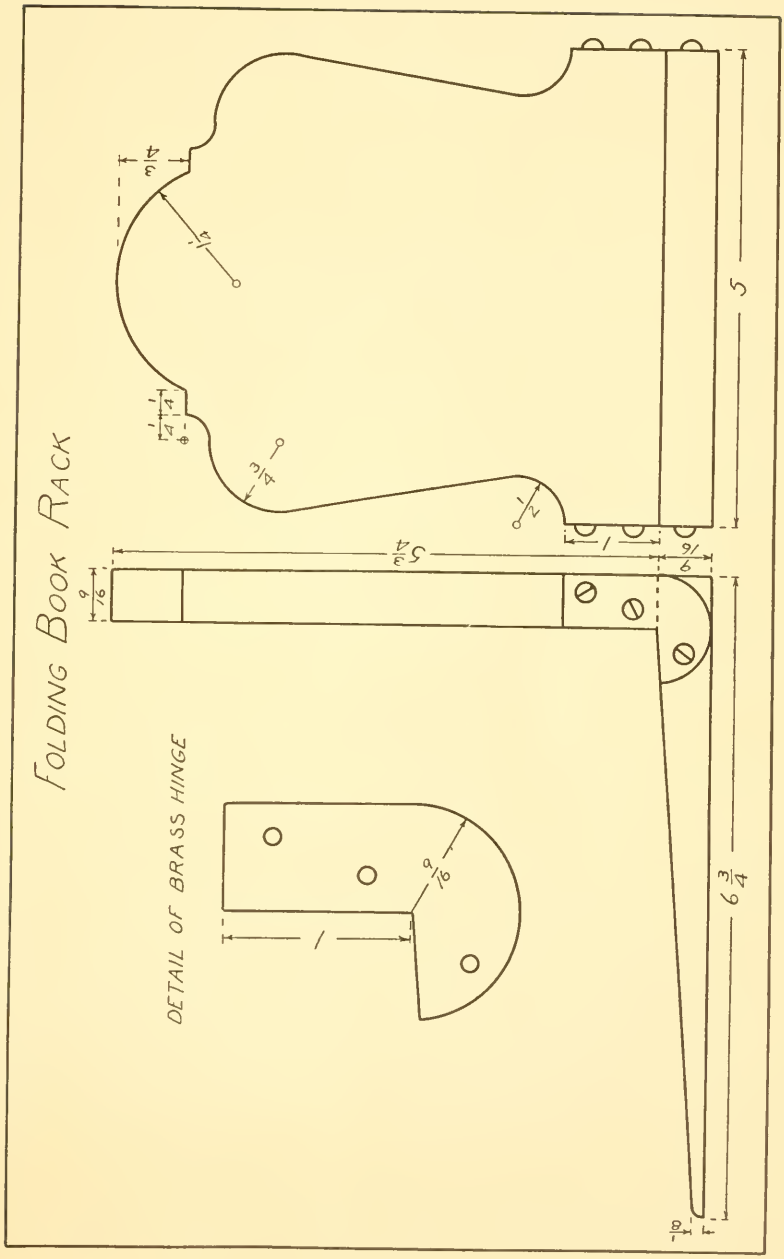

FOLDING BOOK RACK
DETAIL OF BRASS HINGE
5
6 3/4
5 3/4
1
1/2
3/4
3/4
1/4
1/4
3/4
9/16
1/8
9/16
1/8

PLATE 8.

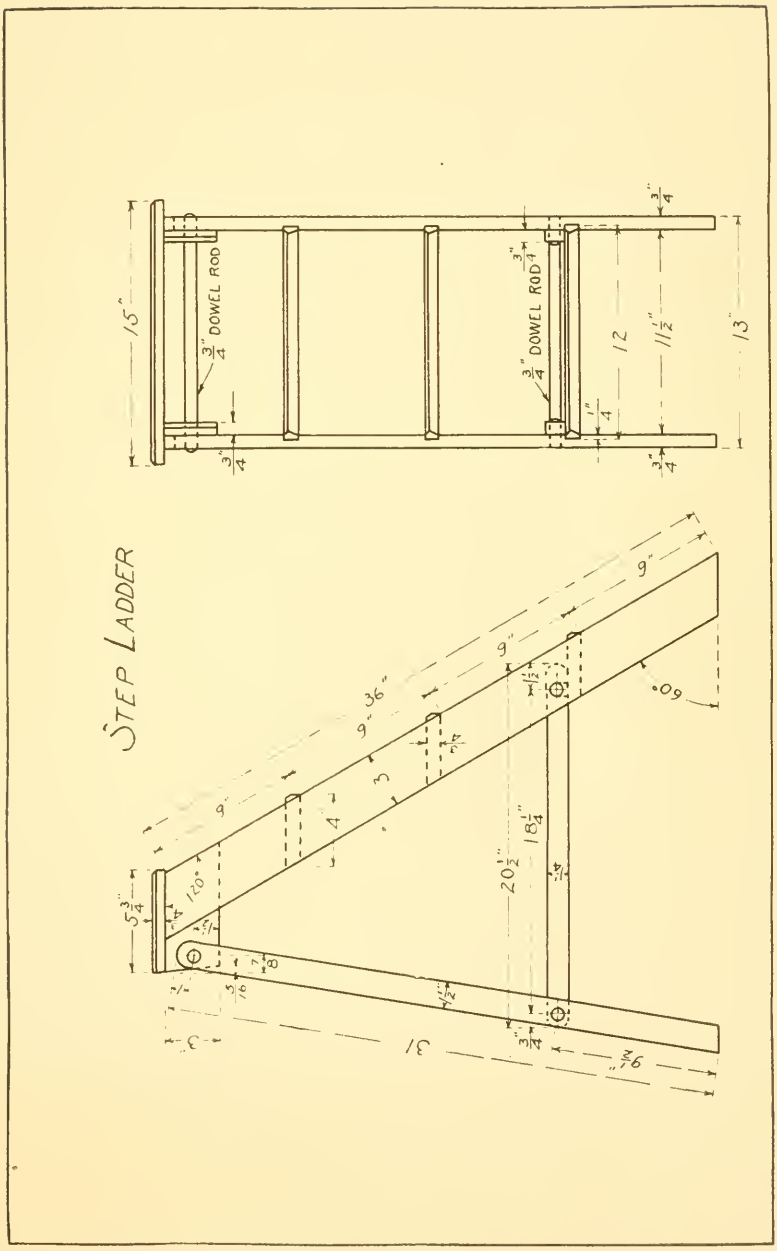
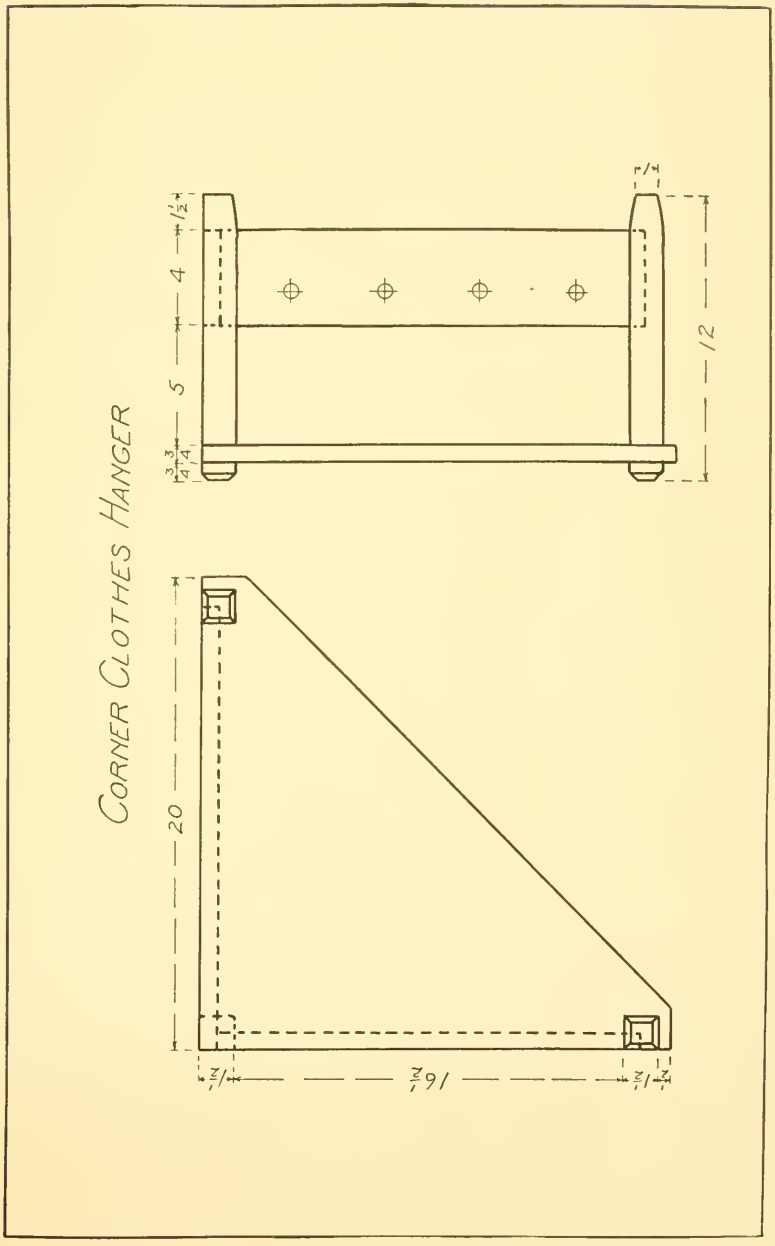

STEP LADDER
15"
3/4" DOWEL ROD
3/4" DOWEL ROD
12
11 1/2"
13"
9"
36"
4
3
60°
20 1/2"
18 1/4"
31"

PLATE 9.



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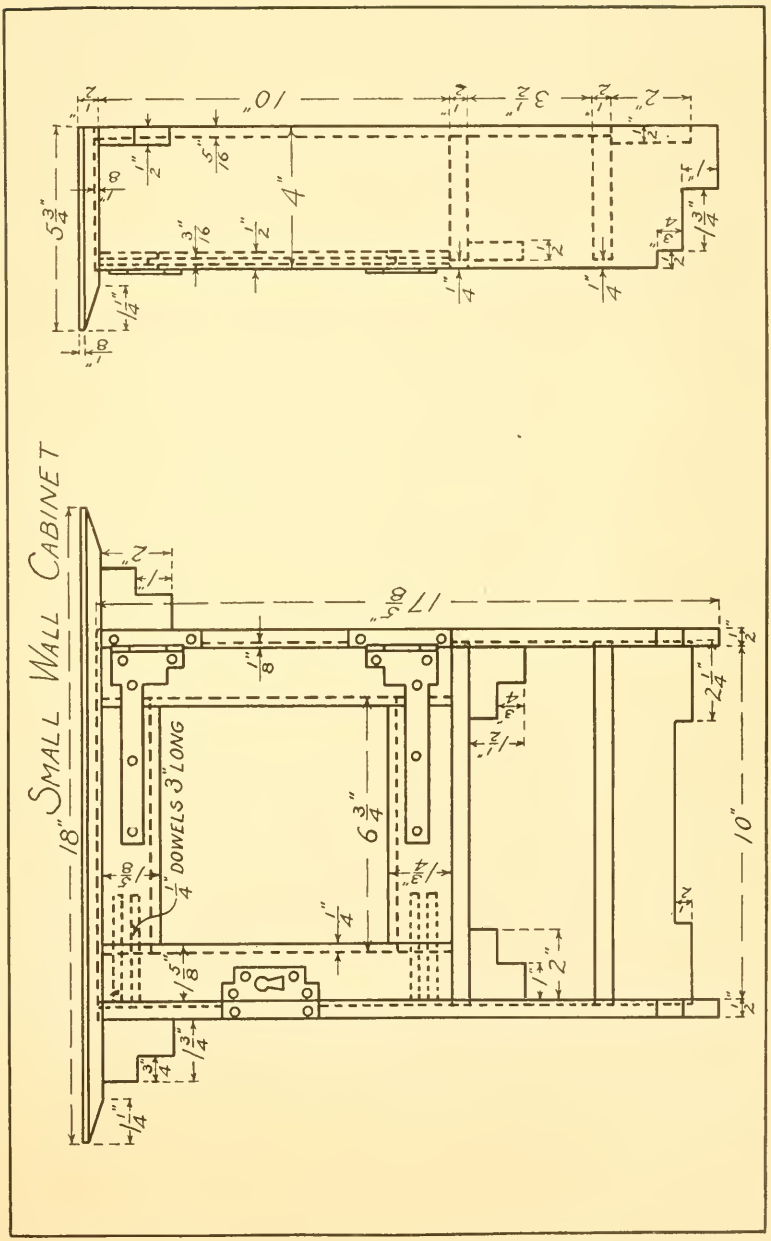

PLATE 11.

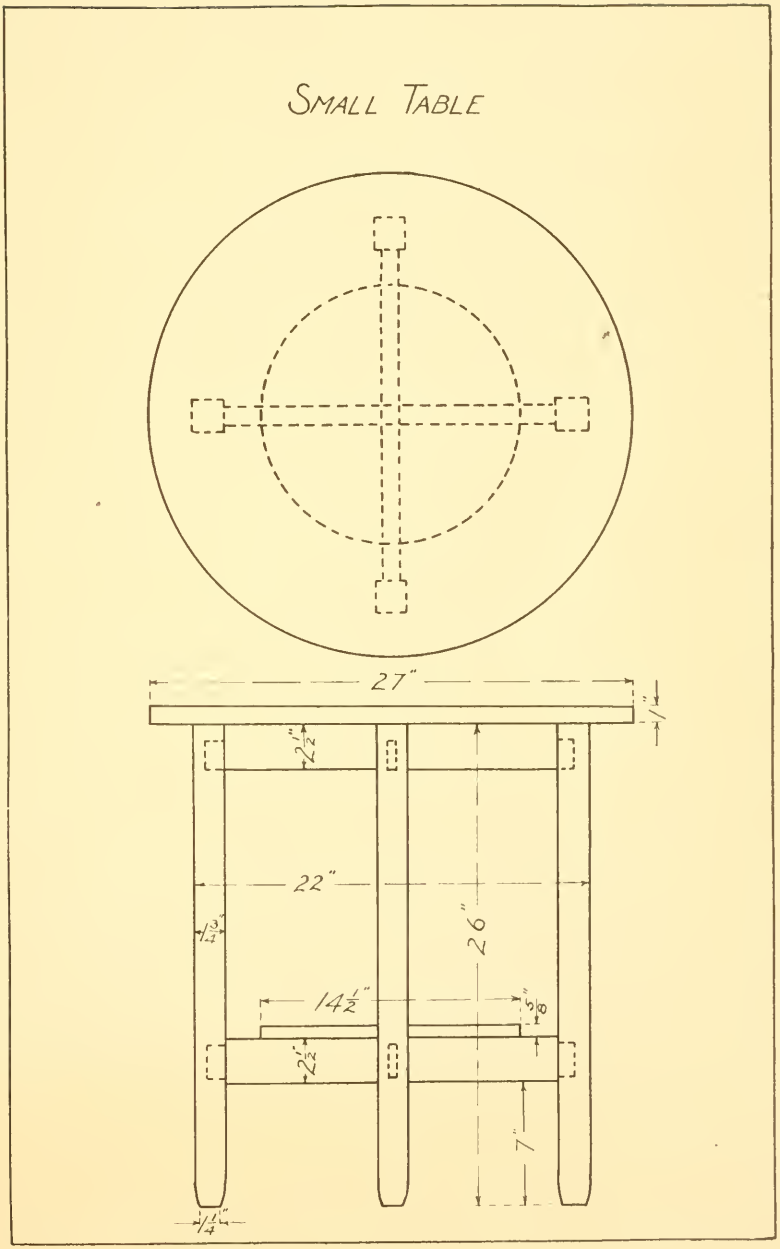

PLATE 12.

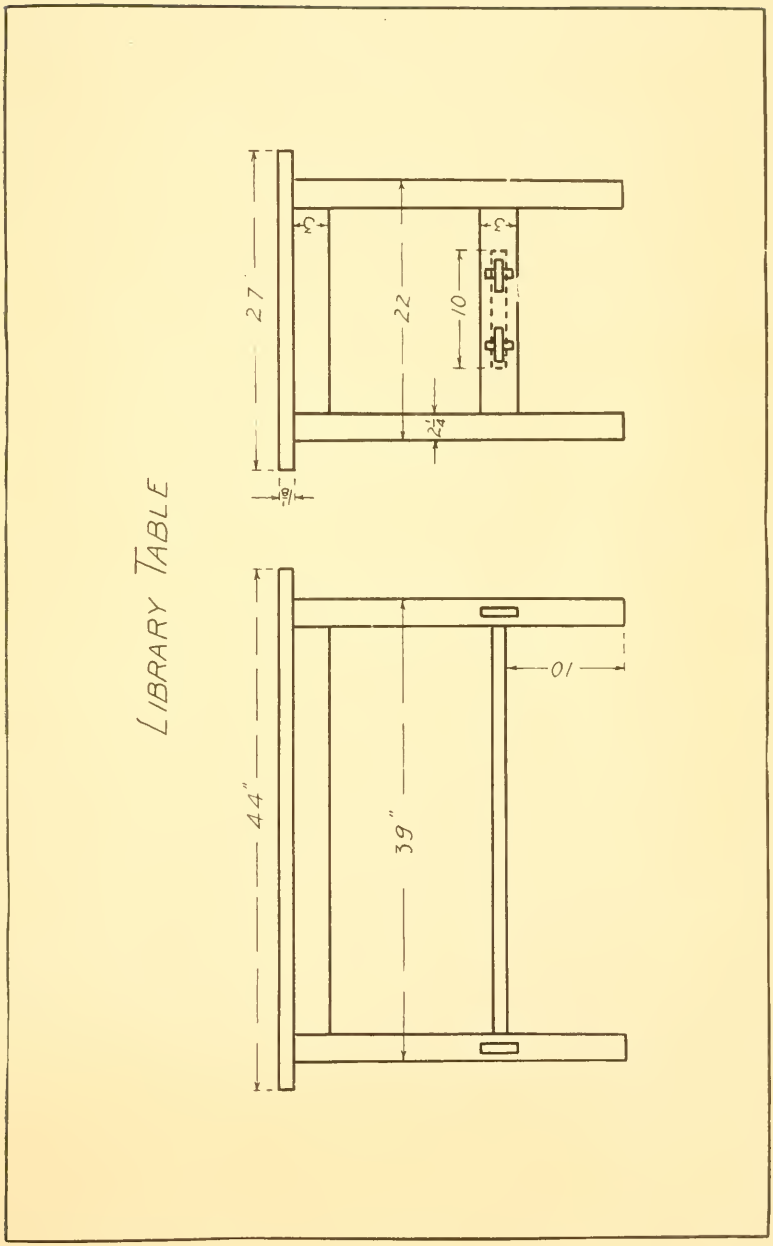

PLATE 13.

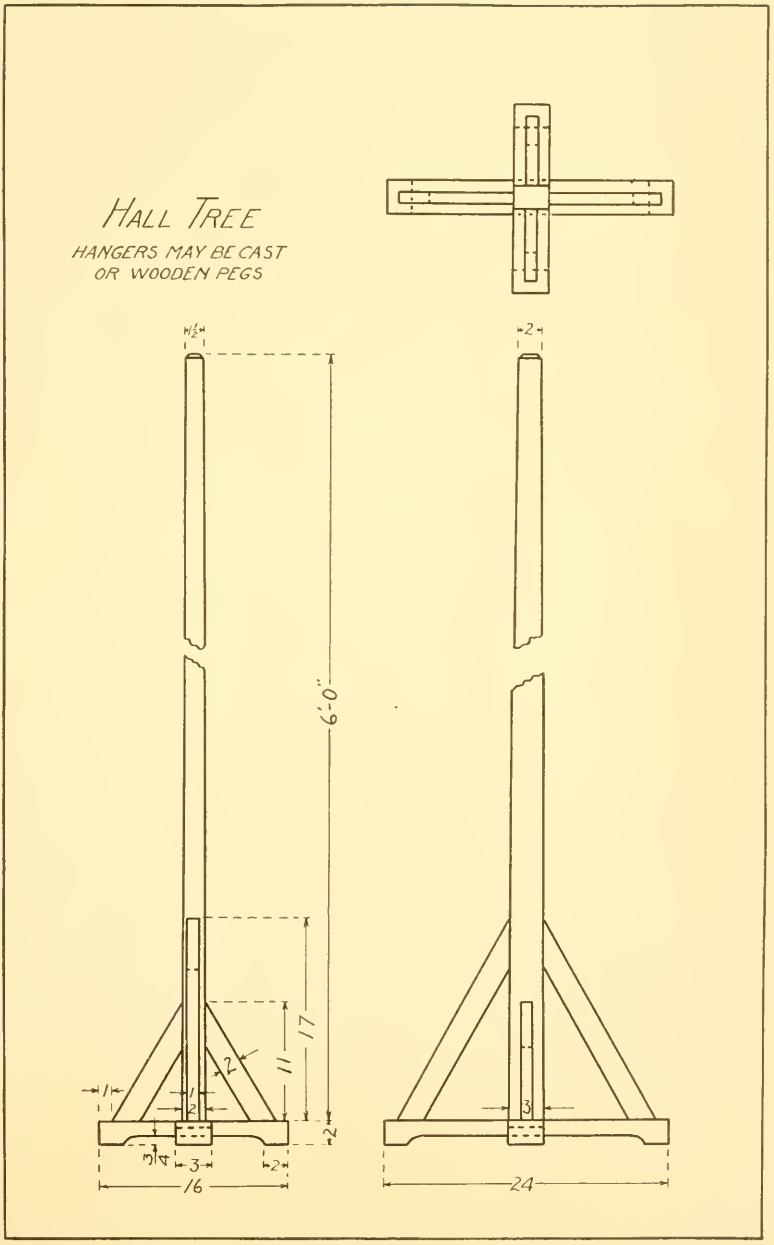
HALL TREE
HANGERS MAY BE CAST
OR WOODEN PEGS
6'-0"
17
11
2
1
1
2
3/4
3
2
16
2
3
24

PLATE 14.

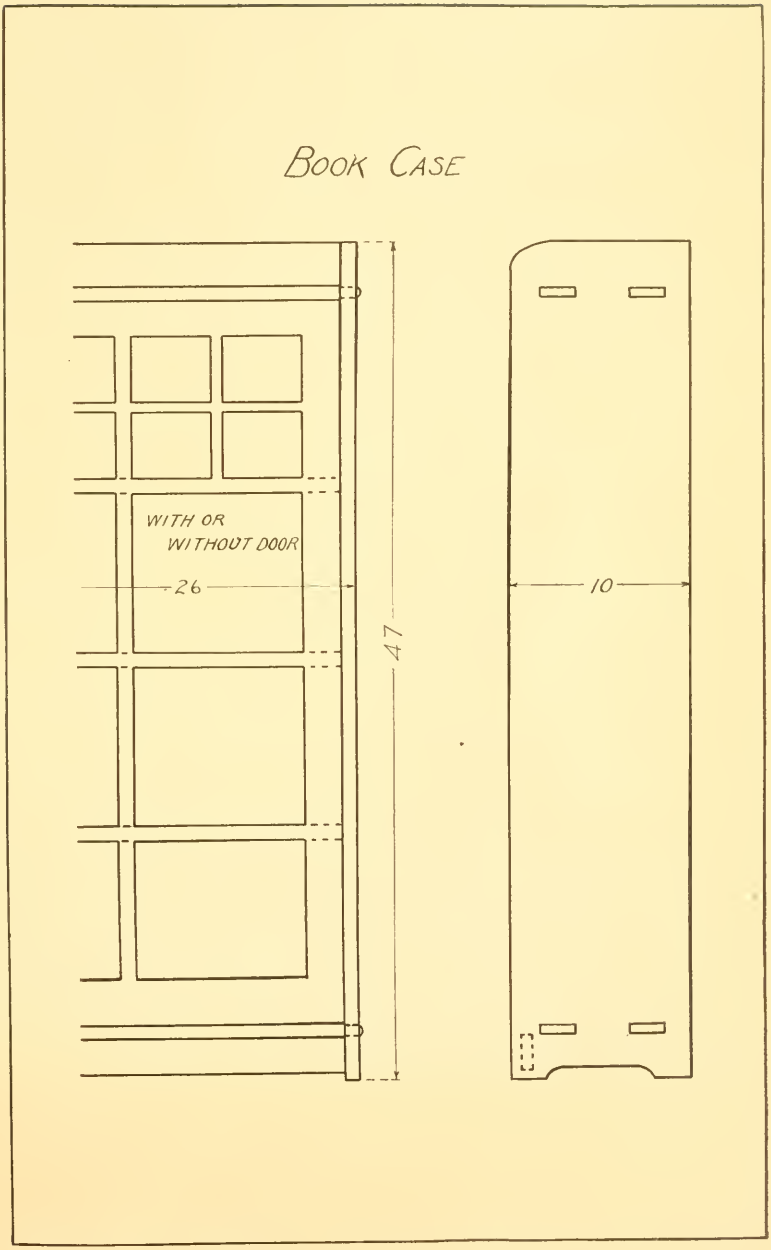

PLATE 15.

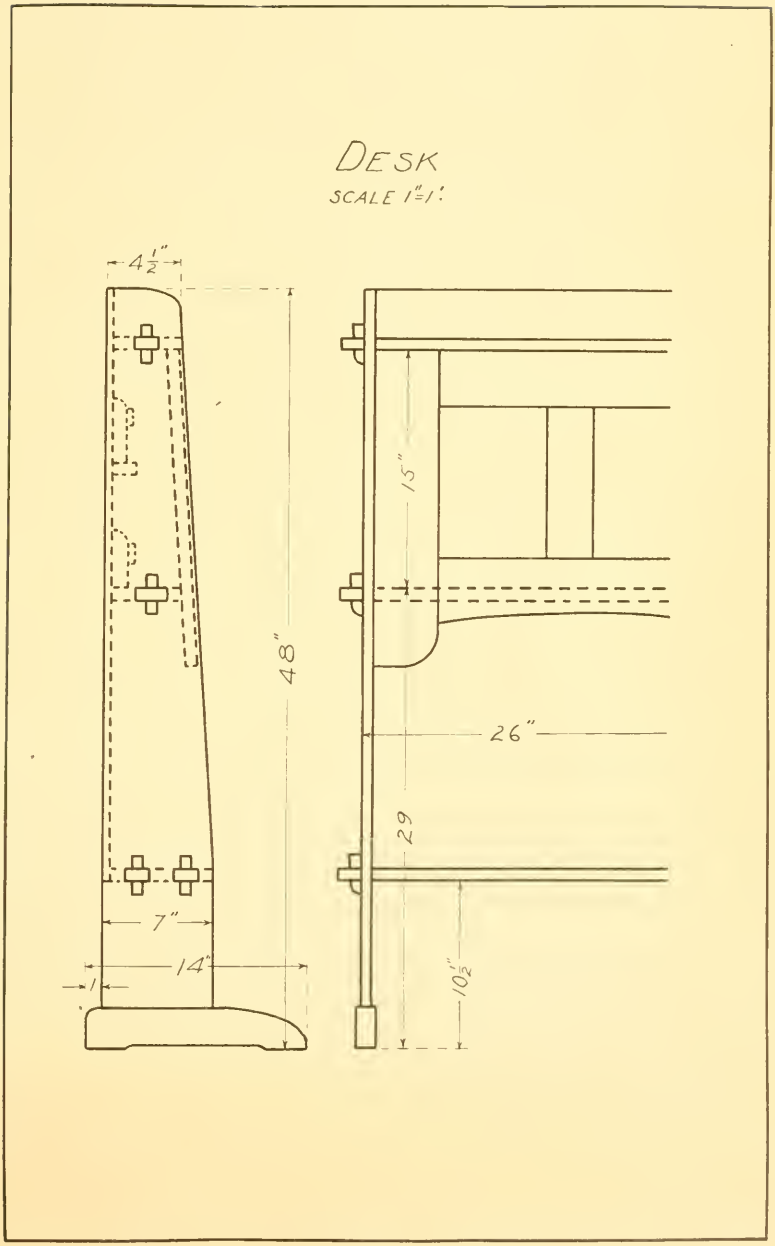

PLATE 16.

Books on the Manual Arts

BEGINNING WOODWORK. At Home and in School. By Clinton Sheldon Van Deusen; illustrated by Edwin Victor Lawrence. Price, $1.00.

ESSENTIALS OF WOODWORKING. By Ira S. Griffith; illustrated by Edwin Victor Lawrence. Price, $1.00.

PROBLEMS IN WOODWORKING. By M. W. Murray. Price, 75 cents.

PROBLEMS IN FURNITURE MAKING. By Fred D. Crawshaw. Price, $1.00.

PROBLEMS IN WOOD-TURNING. By Fred D. Crawshaw. Price, 80 cents.

PROBLEMS IN MECHANICAL DRAWING. By Charles A. Bennett. With drawings by Fred D. Crawshaw. Price, $1.00.

WOODWORK FOR SCHOOLS ON SCIENTIFIC LINES. By James Thomas Bailey and S. Pollitt. Price, 75 cents.

CLAY WORK. By Katherine Morris Lester. Price, $1.00.

SIMPLIFIED MECHANICAL PERSPECTIVE. By Frank Forrest Frederick. Price, 75 cents.

THE WASH METHOD OF HANDLING WATER COLOUR. By Frank Forrest Frederick. Price, 50 cents.

CLASSROOM PRACTICE IN DESIGN. By James Parton Haney Price, 50 cents.

SEND FOR ILLUSTRATED CATALOGUE.

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PEORIA, ILLINOIS